

MidNite Solar MNDC250

MidNite Solar MNDC250 Mini-DC Disconnect User Manual

Model: MNDC250

[Introduction](#) [Features](#) [Installation](#) [Operation](#) [Maintenance](#) [Troubleshooting](#) [Specifications](#) [Warranty](#) [Support](#)

1. INTRODUCTION

This manual provides detailed instructions for the installation, operation, and maintenance of the MidNite Solar MNDC250 Mini-DC Disconnect.

The MNDC250 is designed to provide a safe and reliable DC disconnect solution for various renewable energy installations.

The MidNite Solar MNDC250 is a white powder-coated aluminum chassis featuring a 250A/125VDC breaker. It includes provisions for 5 DIN rail breaker slots or 3 panel mount breaker slots, with a right-hand breaker configuration. This unit is suitable for indoor use (Type 1 Environmental Rating).

2. FEATURES

The MidNite Solar MNDC250 Mini-DC Disconnect incorporates several key features for robust and flexible system integration:

- **Aluminum Chassis:** Constructed from aluminum, ensuring no rust in humid or corrosive environments.
- **Hinged Door:** Provides easy access to internal electrical circuits for installation and maintenance.
- **Inverter Breaker Included:** Comes with a 250 Amp inverter breaker (also compatible with 125 or 175 Amp breakers).
- **DIN Rail Slots:** Features DIN rail for DC circuits such as PV in, Charge Controller out, DC-GFP, DC loads, and PV combiner applications.
- **Ground Bus Bar:** Includes a 14-pole ground bus bar for comprehensive grounding.
- **Mounting Spots:** Six mounting spots are available for 500 amp, 50mV shunts.
- **PV Negative Connection Point:** Dedicated mounting spot for insulated bus bar for PV negative connection.
- **Knockouts:** Pre-punched knockouts for inverter and battery cables, charge control mounting, and DC PV in & out.
- **Battery Negative Tie Point:** A 5/16" diameter stud is provided for battery negative tie point.
- **ETL Listed:** Listed by ETL for both US & Canada safety standards.
- **Made in the USA:** Manufactured in the United States.

3. INSTALLATION

Proper installation is crucial for the safe and efficient operation of the MNDC250. Please follow these instructions carefully.

3.1 Product Overview



MNDC INSTRUCTIONS

Model: MNDC125, MNDC175, MNDC250



Shown with 250 amp sized breaker



MNDC closed

The Mini-DC was designed to take into account many different types of renewable energy installations. These installation instructions will describe and show some of the more common possibilities.

Features:

- Aluminum chassis. (no rust in the tropics or around salt water)
- Hinged door for easy access to electrical circuits
- Inverter breaker included (125, 175 or 250 amp)
- Din rail for DC circuits such as PV in, Chg Cntrl out, DC-GFP, DC loads, PV combiner
- Ground bus bar with 14 poles
- Six mounting spots for 500 amp, 50mV shunt
- Mounting spot for insulated bus bar (for PV negative connection point)
- Knock outs for inverter and battery cables, charge control mounting, DC & PV in & out
- 5/16" diameter stud for battery negative tie point

Figure 3.1: The MidNite Solar MNDC250 Mini-DC Disconnect shown with its door open, revealing the internal components, and a view of the unit when closed. This illustrates the compact design and accessibility of the internal electrical circuits.



Figure 3.2: An internal view of the MidNite Solar MNDC250 Mini-DC Disconnect, highlighting the 250A/125VDC breaker, DIN rail slots, ground bus bar, and various connection points. The white powder-coated aluminum chassis is visible, along with labels for battery negative and ground connections.

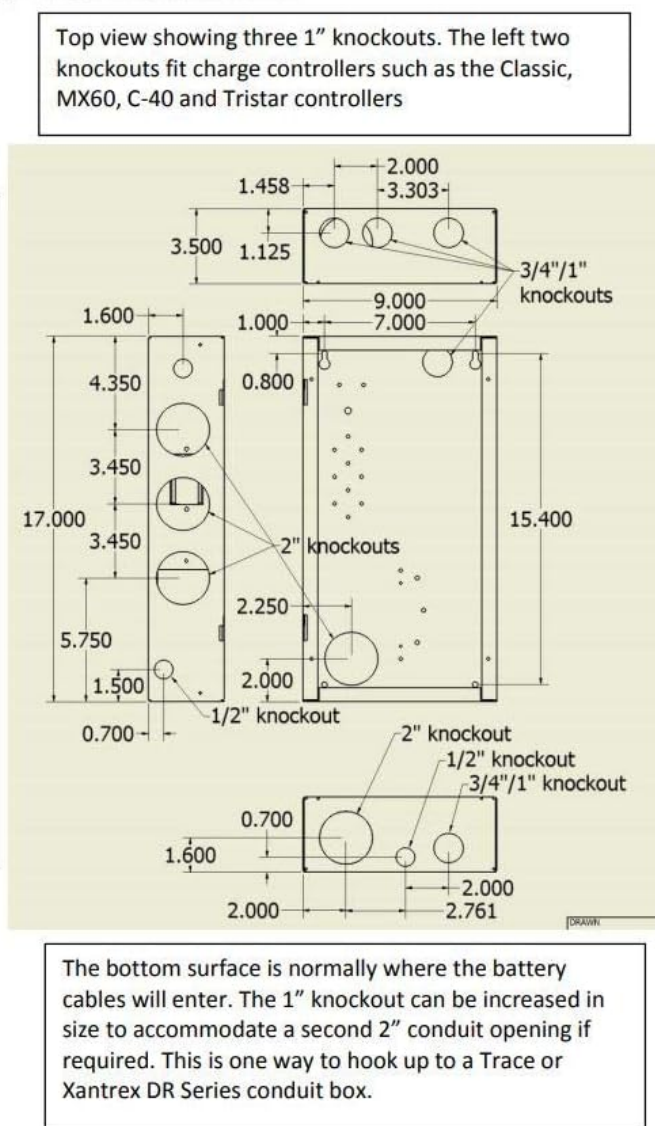
3.2 Conduit Locations and Sizes

The MNDC chassis is designed with various knockouts to accommodate different conduit sizes and wiring configurations. Refer to the diagram below for precise locations and dimensions.

MNDC Instructions (continued)

Dimensioned drawing showing conduit locations and sizes

The left side of the MNDC chassis has three 2" knockouts and two 1/2" knockouts. The 2" knockouts are intended for inverter DC cables. If installing to a Trace or Xantrex SW inverter, use a 2" offset nipple to attach to the SWCB conduit box. If routing cables directly through the hole with no conduit, make sure a plastic grommet is installed to avoid chafing.



Wire type

Due to the small size of this box and limited wire bending room, it is required that the super flexible type battery cable be utilized. Cobra Cable X-Flex is one approved type of cable. Welding cable although not listed for use in residential wiring will also meet the flexibility requirement. Wiring for the din rail mount breakers such as 6AWG for PV circuits may be the stiff THHN or similar type of wire.

Figure 3.3: Dimensioned drawing illustrating the various knockout locations and sizes on the MidNite Solar MNDC250. This includes 1", 3/4", 1/2", and 2" knockouts, indicating their intended use for charge controllers, inverters, and other wiring. Note the recommendation for plastic grommets to prevent chafing.

- **Top View:** Shows three 1" knockouts. The left two knockouts are suitable for charge controllers such as Classic, MX60, C-40, and Tristar controllers.
- **Left Side:** Features three 2" knockouts and two 1/2" knockouts. The 2" knockouts are intended for inverter DC cables. If installing to a Trace or Xantrex SW inverter, use a 2" offset nipple to attach to the SWCB conduit box.
- **Bottom Surface:** Typically where battery cables enter. The 1" knockout can be enlarged to a 2" conduit opening if required, particularly for connection to a Trace or Xantrex DR Series conduit box.
- **Chafing Prevention:** If routing cables directly through a knockout without conduit, ensure a plastic grommet is installed to prevent cable chafing.

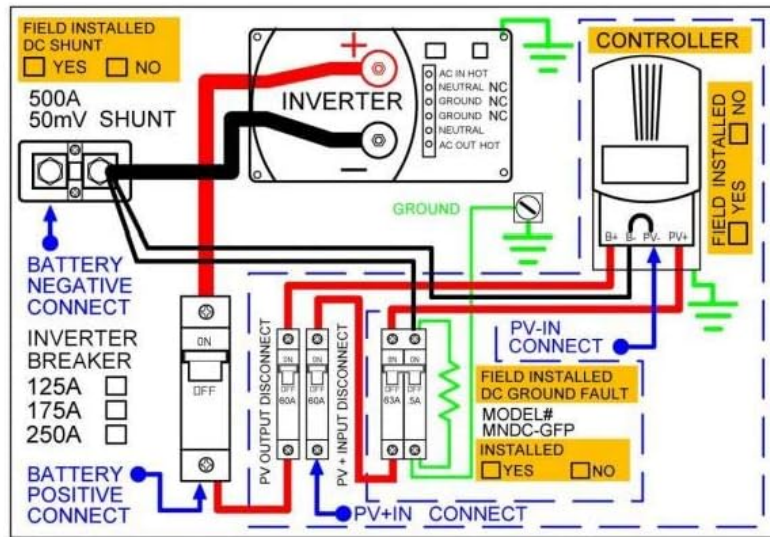
3.3 Wire Type

Due to the compact size of this box and limited wire bending room, it is recommended to use super flexible type battery cable, such as Cobra Cable X-Flex. While welding cable is an approved type of cable, it is not listed for use in residential wiring. For wiring the DIN rail mount breakers (e.g., 6AWG for PV circuits), THHN or similar type wire may be stiff. Always ensure wires are properly sized for the current and voltage requirements of your system.

3.4 Wiring Diagram

The following diagram illustrates a typical wiring configuration for the MNDC250, as supplied on the door of the unit. This diagram shows connections for the inverter, controller, PV input, and battery.

MNDC Instructions (continued)



Wiring diagram supplied on the door of MNDC

Grounding

There are various ground circuits that need to be considered in the renewable energy system. The MNDC chassis should be grounded to your earth ground rod through a 6AWG wire connected to the ground bus bar located in the top left section of the MNDC chassis. The MNDC ground bus bar will then become your primary system DC ground. The ground bus bar is also where DC surge suppressors like the MNSPD get grounded. It is advisable to use one of the 1/2" conduit knockouts to mount a DC lightning arrestor to the MNDC box. It is also common to have a DC lightning arrestor out at the PV Panels that are grounded through their own ground rod. In dry climates it is advisable to also run a ground wire from the PV panels to the MNDC ground. The MNDC ground bus bar is an ideal place to ground a DC-GFP when installed as well as the inverter chassis and the charge control chassis. Do the grounds first since they normally lie in the bottom of the chassis.



Ground Bus Bar

Battery Negative connection

The wiring diagram shows a 500 amp shunt. The voltage drop across the shunt is used to aid in calculating battery state of charge. The shunt does not ground the battery negative circuit. If this shunt is not installed, then you may use the 5/16" stud directly above the shunt area as a battery negative tie point. Using this tie point will ground the battery negative to the chassis. Grounding the battery negative is not allowed when employing a DC-GFP device. The inverter side of the shunt or the 5/16" stud are also an ideal tie point for PV negative or other DC negative circuits.

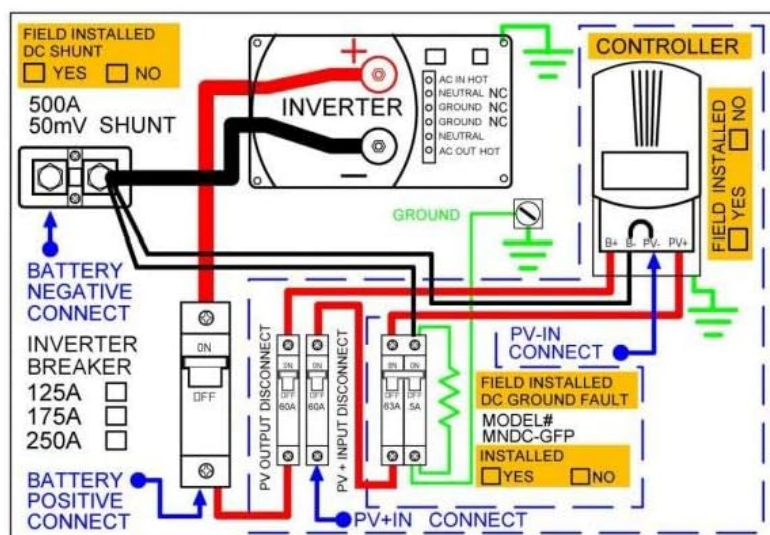
Figure 3.4: A detailed wiring diagram for the MidNite Solar MNDC250, showing connections for the inverter, controller, PV input, and battery. This diagram includes the 500A 50mV shunt, inverter breaker, and various field-installed components, providing a comprehensive guide for system integration.

3.5 Grounding

Proper grounding is essential for safety in any renewable energy system. The MNDC chassis should be grounded to your earth ground rod through a 6AWG wire connected to the ground bus bar located in the top left section of the MNDC chassis. This ground bus bar will become your primary system DC ground.

The ground bus bar is also where DC surge suppressors, such as the MNSPD, should be grounded. It is advisable to use one of the 3/4" conduit knockouts to mount a DC lightning arrestor to the MNDC box. In dry climates, it is permissible to also run a ground wire from the PV panels to the MNDC ground. The MNDC ground bus bar is an ideal place to ground a DC-GFP when installed, as well as the inverter chassis and the charge control chassis. Ensure all ground connections are secure and meet local electrical codes.

MNDC Instructions (continued)



Wiring diagram supplied on the door of MNDC

Grounding

There are various ground circuits that need to be considered in the renewable energy system. The MNDC chassis should be grounded to your earth ground rod through a 6AWG wire connected to the ground bus bar located in the top left section of the MNDC chassis. The MNDC ground bus bar will then become your primary system DC ground. The ground bus bar is also where DC surge suppressors like the MNSPD get grounded. It is advisable to use one of the 1/2" conduit knockouts to mount a DC lightning arrestor to the MNDC box. It is also common to have a DC lightning arrestor out at the PV Panels that are grounded through their own ground rod. In dry climates it is advisable to also run a ground wire from the PV panels to the MNDC ground. The MNDC ground bus bar is an ideal place to ground a DC-GFP when installed as well as the inverter chassis and the charge control chassis. Do the grounds first since they normally lie in the bottom of the chassis.



Ground Bus Bar

Battery Negative connection

The wiring diagram shows a 500 amp shunt. The voltage drop across the shunt is used to aid in calculating battery state of charge. The shunt does not ground the battery negative circuit. If this shunt is not installed, then you may use the 5/16" stud directly above the shunt area as a battery negative tie point. Using this tie point will ground the battery negative to the chassis. Grounding the battery negative is not allowed when employing a DC-GFP device. The inverter side of the shunt or the 5/16" stud are also an ideal tie point for PV negative or other DC negative circuits.

Figure 3.5: The ground bus bar within the MidNite Solar MNDC250 enclosure, located in the top left section. This bus bar serves as the primary DC ground point for the system, connecting the chassis, DC surge suppressors, and other grounded components.

3.6 Battery Negative Connection

The wiring diagram includes a 500 amp shunt. The voltage drop across this shunt is used to calculate the battery state of charge. The shunt should not be grounded to the battery negative circuit. If the shunt is not installed, you may use the 5/16" stud directly above the shunt area as a battery negative tie point. This tie point will ground the battery negative to the chassis. Grounding the battery negative is not permitted when employing a DC-GFP device. The inverter side of the shunt or the 5/16" stud also serves as an ideal tie point for PV negative or other DC negative circuits.

4. OPERATION

The MidNite Solar MNDC250 Mini-DC Disconnect primarily functions as a safety and isolation device within a DC power system. Its operation involves the manual switching of the integrated 250A/125VDC breaker.

- **Engaging Power:** To allow DC power flow through the disconnect, ensure the main 250A breaker is in the "ON" position.
- **Disengaging Power:** To isolate the DC power system for maintenance, troubleshooting, or safety, switch the main 250A breaker to the "OFF" position. This will interrupt the DC current.
- **Overcurrent Protection:** The integrated breaker will automatically trip to the "OFF" position in the event of an overcurrent condition, protecting connected equipment and wiring. If a trip occurs, investigate the cause before resetting the breaker.

Always ensure that all safety precautions are observed when operating or working near high-voltage DC systems.

5. MAINTENANCE

The MidNite Solar MNDC250 is designed for minimal maintenance. However, periodic checks are recommended to ensure optimal performance and safety.

- **Visual Inspection (Annually):**
 - Inspect the enclosure for any signs of physical damage, corrosion, or moisture ingress.
 - Check all wiring connections for tightness. Loose connections can lead to overheating and system inefficiencies.
 - Examine the breaker for any signs of damage or discoloration.
- **Cleaning:** If necessary, gently clean the exterior of the enclosure with a dry, soft cloth. Do not use abrasive cleaners or solvents. Ensure the unit is de-energized before cleaning internal components.
- **Breaker Functionality:** Periodically (e.g., every 6-12 months), cycle the main breaker ON and OFF a few times to ensure smooth operation.

Always disconnect all power sources before performing any internal maintenance or inspection.

6. TROUBLESHOOTING

This section provides guidance on common issues you might encounter with your MNDC250. For complex problems, contact qualified personnel or MidNite Solar support.

Problem	Possible Cause	Solution
Breaker Trips Frequently	Overcurrent/Overload on DC circuit. Short circuit in wiring or connected equipment. Faulty breaker.	Reduce load or check system design for proper sizing. Inspect all DC wiring and connected devices for shorts. If other solutions fail, the breaker may need replacement. Contact MidNite Solar support.
No Power Output from Disconnect	Breaker is in "OFF" or tripped position. Loose or corroded connections. No input power to the disconnect.	Ensure breaker is in the "ON" position. Reset if tripped. Check all input and output wiring connections for tightness and corrosion. Verify power is present from the battery bank or PV array to the input terminals of the MNDC250.
Enclosure Overheating	Loose connections. Overload condition. Inadequate ventilation.	Check and tighten all electrical connections. Verify that the current draw does not exceed the breaker's rating. Ensure the installation location allows for proper airflow around the enclosure.

7. SPECIFICATIONS

Detailed technical specifications for the MidNite Solar MNDC250 Mini-DC Disconnect:

Attribute	Value
Model Number	MNDC250
Breaker Rating	250 Amps / 125 VDC
Environmental Rating	Type 1 (Indoor)
Chassis Material	White Powder Coated Aluminum
Dimensions (L x W x D)	17" x 9" x 4"
Weight	7 Lbs

Attribute	Value
Breaker Slots	5 DIN rail or 3 panel mount
Ground Bus Bar	14 poles
Certifications	ETL Listed for US & Canada
Country of Origin	USA

7.1 Dimensional Drawing

For detailed physical dimensions and component layout, refer to the engineering drawing below.

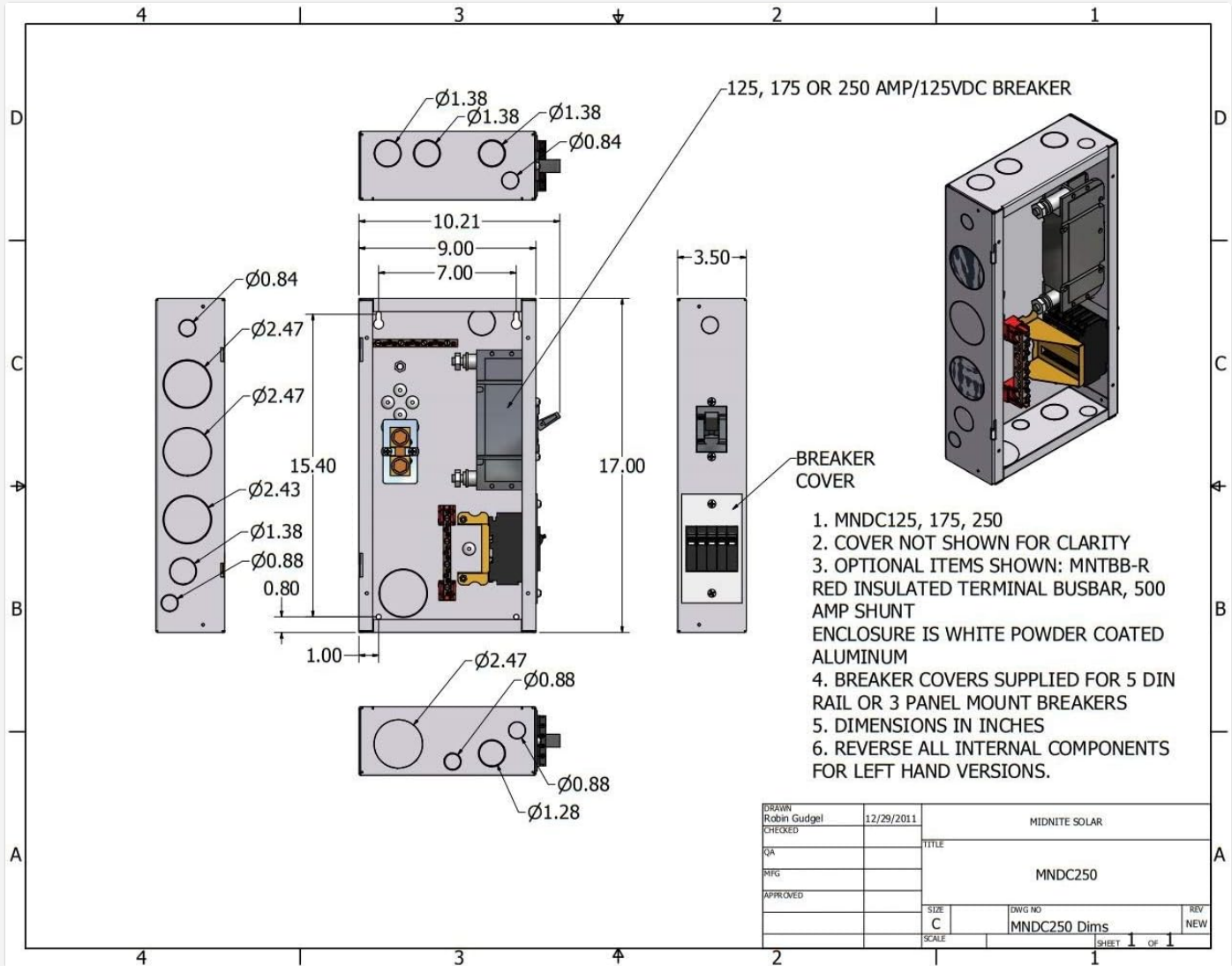


Figure 7.1: A comprehensive dimensional drawing of the MidNite Solar MNDC250, showing various views (front, side, top) and precise measurements of the enclosure, knockout locations, and internal component placement. This drawing is essential for planning installation and integration.

8. WARRANTY

The MidNite Solar MNDC250 Mini-DC Disconnect comes with a **5-year warranty** from the date of purchase. This warranty covers defects in materials and workmanship under normal use and service. It does not cover damage resulting from improper installation, misuse, abuse, natural disasters, or unauthorized modifications. For warranty claims, please retain your proof of purchase and contact MidNite Solar customer support.

9. CUSTOMER SUPPORT

If you have any questions, require technical assistance, or need to report an issue with your MidNite Solar MNDC250, please contact MidNite Solar customer support. For the most up-to-date contact information and resources, please visit the official MidNite Solar website or refer to the contact details provided with your product packaging.
Online Resources: www.midnitesolar.com

ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. [Privacy details](#).

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question